

IN THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application:

1. (currently amended) ~~[[A]]~~ An implantable brachytherapy treatment system, comprising

a therapy delivery portion comprising at least one flexible non-dissolving casing and a support member or shielding enclosed within the casing and extending between proximal and distal ends of the casing; and

one or more radiation sources ~~fixed relative to or~~ removably received in the casing.

2-39. (canceled)

40. (currently amended) A kit for delivering brachytherapy to a target tissue region of a body, the kit comprising:

a removably implantable elongate brachytherapy device comprising a therapy delivery portion; and one or more low dose radiation (LDR) radioactive sources secured to the therapy delivery portion;

at least one non-dissolving flexible tail portion; and

a catheter comprising a proximal end, a distal end, a lumen extending therebetween sized for receiving the brachytherapy device for delivering the brachytherapy device to the target tissue region, and a support member extending adjacent the lumen between the proximal and distal ends.

41-91. (canceled)

92. (currently amended) A system for delivering brachytherapy to a target tissue region of the breast, comprising:

at least one elongate tubular member comprising proximal and distal ends and a lumen extending therebetween, the tubular member configured to be delivered along a first axis within the target tissue region;

one or more radiation sources removably disposed within the lumen of the tubular member for delivering radiation therapy to the target tissue region along a second non-linear axis; and

a support member extending between the proximal and distal ends of the tubular member such that the support member is provided adjacent the one or more radiation sources when the one or more radiation sources are disposed within the lumen.

93-94. (canceled)

95. (previously presented) The system of claim 92, wherein the support member is enclosed within the at least one tubular member.

96. (previously presented) The system of claim 95, wherein the at least one tubular member comprises heat shrink tubing.

97. (previously presented) The system of claim 92, wherein the support member has curvature in its relaxed state.

98. (previously presented) The system of claim 92, wherein the support member is sufficiently flexible to permit curved implantation.

99. (previously presented) The system of claim 92, wherein the lumen of the at least one tubular member comprises a first lumen for receiving the one or more radiation sources therein, and the at least one tubular member comprises a second lumen containing the support member.

100. (canceled)

101. (previously presented) The system of claim 92, wherein the one or more radiation sources comprise a plurality of radioactive seeds spaced apart along the tubular member.

102-104. (canceled)

105. (previously presented) The system of claim 92, further comprising a plurality of additional elongate tubular members, each comprising proximal and distal ends, a lumen extending therebetween for receiving one or more radiation sources, and configured to be implanted along a non-linear axis within the target tissue region.

106. (previously presented) The system of claim 105, further comprising means for delivering the plurality of additional elongate therapy devices.

107. (previously presented) A system for delivering brachytherapy to a target tissue region within a breast, the system comprising a plurality of elongate therapy devices, each comprising a therapy delivery portion advanceable through tissue in a straight configuration and deployable to a curved configuration within the breast for delivery of radiation to the target tissue region.

108. (previously presented) The system of claim 107, wherein each therapy delivery portion is configured in the curved configuration to provide conformance of the delivery portion to a shape of the target tissue region to be irradiated.

109. (previously presented) The system of claim 107, further comprising means for delivering the plurality of elongate therapy devices through tissue to the target tissue region.

110. (previously presented) The system of claim 109, wherein the means for delivering the plurality of elongate therapy devices comprises a plurality of tubular members for receiving respective therapy devices therethrough.

111-112. (canceled)

113. (previously presented) The system of claim 107, wherein each therapy delivery portion comprises one or more radiation sources for delivering radiation to tissue adjacent the therapy delivery portion.

114. (previously presented) The system of claim 107, wherein the one or more radiation sources comprise a plurality of radioactive seeds spaced apart along the therapy delivery portion.

115-148. (canceled)

149. (currently amended) A system for delivering radiation therapy to a target tissue region within a breast, comprising:

at least one therapy delivery element comprising a tubular member, the tubular member comprising a support member extending between proximal and distal ends thereof constructed to cause bending in a predetermined, preferred plane of bending to provide conformance of the at least one therapy delivery element to the target region of the lumpectomy cavity to be irradiated; and

one or more radiation sources removably carried by the tubular member.

150. (previously presented) The system of claim 149, wherein the therapy delivery element is constructed to curve within or around the target tissue region.

151. (previously presented) The system of claim 149, further comprising a support member extending along the tubular member to cause bending in a preferred direction.

152. (previously presented) The system of claim 151, wherein the support member comprises a metallic strip.

153. (canceled)

154. (previously presented) The system of claim 151, wherein the support member is encased within the tubular member.

155. (previously presented) The system of claim 151, wherein the tubular member comprises a first lumen for receiving the one or more radiation sources and a second lumen containing the support member.

156. (previously presented) The system of claim 149, wherein the tubular member comprises heat shrink tubing.

157. (previously presented) The system of claim 149, wherein the therapy delivery element assumes a repeating pattern of curvilinear pathways within or around the target tissue region when deployed at the target tissue region.

158. (previously presented) The system of claim 157, wherein the therapy delivery element curves within or around the target tissue region.

159-180. (canceled)

181. (new) An implantable brachytherapy treatment system for treating a target tissue region within a breast, comprising:

at least one elongate tubular member comprising a proximal end, a distal end sized for introduction through tissue of a breast to a target tissue region, and a first lumen extending between the proximal and distal ends;

a support member extending between the proximal and distal ends of the tubular member outside the first lumen, the support member configured for delivering the tubular member through tissue in a straight configuration and deploying the tubular member in a curved configuration within or around the target tissue region; and

a radiation source receivable in the first lumen of the tubular member for delivering radiation therapy to the target tissue region in the curved configuration.

182. (new) The system of claim 181, wherein the wherein the at least one tubular member comprises heat shrink tubing.

183. (new) The system of claim 181, wherein the support member is enclosed within the tubular member.

184. (new) The system of claim 181, wherein the tubular member comprises a second lumen extending between the proximal and distal ends thereof adjacent the first lumen, and wherein the support member is received in the second lumen.

185. (new) The system of claim 181, wherein the support member comprises a strip of material.

186. (new) The system of claim 181, wherein the support member is configured for attenuating or shielding radiation to surrounding tissue.

187. (new and withdrawn) The system of claim 181, wherein the support member has curvature in its relaxed state, the system further comprising a cannula for constraining the tubular member in the straight configuration for introduction through tissue.

188. (new) The system of claim 181, wherein the radiation source comprises an afterload HDR cable.

189. (new and withdrawn) The system of claim 181, wherein the support member has a flat cross-section.

190. (new) The system of claim 181, comprising a plurality of tubular members including the at least one tubular member, the plurality of tubular members configured for simultaneous introduction through tissue of a breast to a target tissue region in a straight configuration and deployable in a curved configuration within or around the target tissue region.

191. (new) An implantable brachytherapy treatment system for treating a target tissue region within a breast, comprising:

at least one elongate tubular member comprising a proximal end, a distal end sized for introduction through tissue of a breast to a target tissue region, and a first lumen extending between the proximal and distal ends;

a strip of material extending between the proximal and distal ends of the tubular member within the tubular member adjacent the first lumen; and

a radiation source receivable in the first lumen of the tubular member for delivering radiation therapy to the target tissue region,

wherein the tubular member is configured for introduction through tissue in a straight configuration and deployable in a curved configuration within or around the target tissue region.

192. (new) The system of claim 191, wherein the wherein the at least one tubular member comprises heat shrink tubing.

193. (new) The system of claim 191, wherein the strip of material is enclosed within the tubular member.

194. (new) The system of claim 191, wherein the tubular member comprises a second lumen extending between the proximal and distal ends thereof adjacent the first lumen, and wherein the support member is received in the second lumen.

195. (new) The system of claim 191, wherein the support member is configured for attenuating or shielding radiation to surrounding tissue.

196. (new and withdrawn) The system of claim 191, wherein the strip of material has curvature in its relaxed state, the system further comprising a cannula for constraining the tubular member in the straight configuration for introduction through tissue.

197. (new) The system of claim 191, wherein the radiation source comprises an afterload HDR cable.

198. (new and withdrawn) The system of claim 191, wherein the support member has a flat cross-section.

199. (new) The system of claim 191, comprising a plurality of tubular members including the at least one tubular member, the plurality of tubular members configured for simultaneous introduction through tissue of a breast to a target tissue region in a straight configuration and deployable in a curved configuration within or around the target tissue region.

200. (new) The system of claim 191, wherein the tubular member comprises a plastic co-extrusion.